



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/064,894	08/27/2002	Deepa Ramaswamy	200-1576	7972
28395	7590	02/10/2006	EXAMINER	
BROOKS KUSHMAN P.C./FGTL 1000 TOWN CENTER 22ND FLOOR SOUTHFIELD, MI 48075-1238			BEHNCKE, CHRISTINE M	
			ART UNIT	PAPER NUMBER
			3661	

DATE MAILED: 02/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/064,894

Applicant(s)

RAMASWAMY ET AL.

Examiner

Christine M. Behncke

Art Unit

3661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 August 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input checked="" type="checkbox"/> Other: <u>See Continuation Sheet</u> . |

Continuation of Attachment(s) 6). Other: Foreign Reference: DE 10044319A1.

DETAILED ACTION

1. This office action is in response to the Remarks and Declaration filed 16 November 2005, in which claims 1-18 were presented for examination.

Response to Amendment

2. The Declaration filed on 19 November 2005 under 37 CFR 1.131 is sufficient to overcome the Folkerts et al. reference, US Patent Application Publication No. 2004/0034460.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, and 11-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harms et al., German Patent NO. DE 100 44 319 A1, in view of the translation filed in US Patent 6,865,459.

4. **(Claim 1)** Harms et al. discloses a modular vehicle system controller for use with a vehicle, said controller containing a plurality of integrated and removable software control portions (Column 2, lines 32-41), wherein each respective software control portion corresponds to a certain vehicle drive system functionality such that the corresponding vehicle drive system functionality may be changed by removing one or

Art Unit: 3661

more of the integrated software control portions and replacing it with a substitute software control portion (Column 4, lines 39-54), wherein the integrated software control portions contained within the controller are replaceable without removing the entire controller (Figures 1 and 2, Column 5, lines 23-40).

5. **(Claim 11)** Harms et al. discloses a method of organizing a vehicle system controller for use with a vehicle, said method comprising the step of: partitioning said controller into a plurality of integrated and removable software control portions (Figure 3, Column 5, line 54-Column 6, line 9), each respective control portion corresponding to a particular vehicle drive system functionality (Column 6, lines 10-39).

6. **(Claim 15)** Harms et al. discloses a method of controlling a plurality of systems within a vehicle, said method comprising the steps of: logically grouping said plurality of systems into functional vehicle drive system groups (Column 4, lines 27-53); providing a vehicle system controller having a modular architecture (Column 2, lines 32-41); providing a plurality of removable modular system control software portions corresponding to each of said functional vehicle drive system groups (Column 2, lines 42-47 and Column 4, lines 27-53); and integrating said plurality of modular system control portions within the modular architecture of said vehicle system controller (Column 2, lines 32-41), wherein the control portions may be removed from the architecture of the vehicle system controller without removing the vehicle system controller from the vehicle (Figures 1 and 2, Column 5, lines 23-40).

Harms et al. does not disclose wherein the modular vehicle system is used specifically with a hybrid electric vehicle control. However, it would have been obvious

Art Unit: 3661

to one of ordinary skill in the automotive art at the time of the invention to combine the modular vehicle system to a hybrid electric vehicle because as Harms et al. suggests the modular system may be applied to an electronic, drive train or the coordination of motion, or the entire vehicle system to design, develop, or implement control tasks in a very flexible and individualized manner and to change at any time or expand the system already in use by adding new operating functions (Column 2, lines 42-55 and Column 3, lines 1-4).

7. **(Claim 2)** Harms et al. further discloses wherein said plurality of portions includes a vehicle mode control portion which is effective to select an operating mode of said vehicle (figure 3, Column 4, lines 30-40).

8. **(Claim 12)** Harms et al. further discloses wherein said step of partitioning said controller into a plurality of removable control portions (Column 5, lines 23-40), each of said plurality of control portions corresponding to a particular vehicle functionality further comprises the step of: logically grouping said plurality of control portions into functional groups (figure 3, Column 5, line 54-Column 6, line 9, Column 6, lines 23-39).

9. **(Claim 13)** Harms et al. further discloses wherein each of said plurality of control portions represents a removable hardware portion (Figure 2, Column 2, lines 38-47 and Column 5, lines 23-40).

10. **(Claim 14)** Harms et al. further discloses wherein each of said plurality of control portions represents a removable software portion (Column 1, line 61-Column 2, line 3 and lines 38-47).

11. **(Claim 16)** Harms et al. further discloses wherein each of said plurality of modular control portions represents a removable hardware portion (Figure 2, Column 2, lines 38-47 and Column 5, lines 23-40).
12. **(Claim 17)** Harms et al. further discloses wherein each of said plurality of modular control portions represents a removable software portion (Column 1, line 61-Column 2, line 3 and lines 38-47).
13. **(Claim 18)** Harms et al. further discloses wherein said step of logically grouping said plurality of systems into functional groups further comprises the step of: maintaining a hierarchical control architecture for said plurality of systems (Column 1, lines 34-53 and Column 2, lines 9-13).

Claim Rejections - 35 USC § 103

14. **Claim 3** is rejected under 35 U.S.C. 103(a) as being unpatentable over Harms et al, as applied to claims 1 and 2 above, and in further view of Raftari et al., US Patent No. 6,490,511.
15. Harms et al. discloses the modular vehicle system controller previously applied to claims 1 and 2 above, but does not disclose the controller including an output torque requester to determine a total output torque. However, Raftari et al. teaches an output torque requestor control portion that is effective to receive torque commands from a plurality of vehicle subsystems and to determine a total output torque (Column 5, line 57-Column 6, line 11). It would have been obvious to one of ordinary skill in the automotive art at the time of the invention to combine the control system of Harms et al.

with the teachings of Raftari et al. because as Raftari et al. suggests, the torque control monitoring system improves vehicle efficiency by independently controlling vehicle subsystems to provide desired wheel torque (Column 2, lines 14-29). Whereas the control architecture disclosed by Harms et al. allows for the efficient control of partial operating modules that can be advantageously connected to a preexisting electronic vehicle system, reused and at any time replaced (Column 2, lines 38-55).

Claim Rejections - 35 USC § 103

16. Claims 4-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harms et al, in view of Raftari et al. as applied to claim 3 above, and in further view of Mizuno et al., US Patent No. 6,555,928.

17. **(Claim 4)** Harms et al. discloses the modular vehicle system controller previously discussed wherein the controller could be used in a vehicle to control the power train control portion (Figure 3 and Column 4, lines 27-54) and further an electrical energy management control portion (figure 3). Harms et al. does not disclose wherein the control portions include a battery management control portion to control the opening and closing of contactors within a battery pack. However, Mizuno et al. teaches a system for a hybrid electric vehicle with a plurality of partitioned control portions, wherein the hybrid electric vehicle includes a battery back (unit 36) and wherein the plurality of control portions further include a battery maintenance control portion which is effective to control opening and closing of contactors within the battery pack, monitor the battery pack for faults, and process the battery pack power limits (Column 12, lines

16-33). It would have been obvious to one of ordinary skill in the automotive art at the time of the invention to combine the system of Harms et al., in view of Raftari et al., with the teachings of Mizuno et al. because for a safe and functioning hybrid vehicle, a controller for monitoring and controlling the battery pack is essential. The system of Harms et al. as suggested with the general drive train control and electrical energy management control portions, would allow the battery control to be more easily replaced, updated or customized with relative ease and expense (Column 2, lines 52-67).

18. **(Claim 5)** Harms et al. further discloses wherein said plurality of control portions further includes a driver information control portion which is effective to receive signals from vehicle sensors (Column 3, lines 35-55 and figure 3) and to calculate vehicle operating data which is conveyed to a driver of said vehicle (Column 6, lines 23-39 and figure 3).

19. **(Claim 6)** Harms et al. further discloses wherein said vehicle includes at least one power source (internal combustion engine, figures 1 and 3), and wherein said plurality of control portions further includes an energy management control portion which is effective to control the delivery of power to said vehicle by said at least one power source (figures 1 and 3, Column 5, line 64-Column 6, line 9 and Column 6, lines 17-39).

20. **(Claim 7)** Harms et al. in view of Raftari et al., further discloses wherein said plurality of control portions further comprises a brake system control portion which controls engine compression braking functions within said vehicle (figure 3, braking

Art Unit: 3661

regulation 315, Column 4, lines 14-26 and Column 6, lines 35-39). Harms et al. does not disclose a brake system control portion which controls regenerative braking functions. However, both Raftari et al. and Mizuno et al. teach wherein the hybrid electric vehicle controller comprises a control portion for a braking system which controls regenerative and engine compression braking functions (Mizuno, regenerative braking: Column 5, lines 29-40, Column 7, lines 14-32 and Raftari: Column 2, lines 39-64, figure 4). It would have been obvious to one of ordinary skill in the automotive art at the time of the invention to combine the system of Harms et al. with the teachings of Raftari or Mizuno because both Mizuno and Raftari teaches the widely used power train system of a hybrid vehicle may include regenerative braking option for increasing the efficiency of the hybrid vehicle by using regenerative braking to charging battery packs. Harms et al. discloses the control portions for braking and drive train control (figure 3), in view of the teachings of Mizuno and Raftari it would have be further obvious to one of ordinary skill in the art to contain a control portion as disclosed by Harms et al. for the control of the vehicle braking, regenerative, engine, and pads, to allow for more easily replaced, updated or customized with relative ease and lower expense (Column 2, lines 52-67).

21. **(Claim 8)** Harms et al. further discloses wherein said plurality of control portions further comprises a torque estimation control portion which estimates an amount of torque produced by said at least one power source (Column 4, lines 14-26).

22. **(Claim 9)** Harms et al. further discloses wherein said at least one power source comprises an internal combustion engine (Column 4, lines 14-26).

Art Unit: 3661

23. **(Claim 10)** Harms et al. further discloses wherein said plurality of control portions further comprises an engine control portion (engine management 301) which controls the engine-dependent functions (Column 5, line 64-Column 6, line 9) and the control of engine specific functions, such as internal combustion ignition time point, air/fuel ratio and etc. (Column 4, lines 14-26). Harms et al. does not specifically disclose controlling a process and timing of when to startup and shutdown said internal combustion engine. However, Raftari et al. teaches an engine control unit which controls a process and timing of when to startup and shutdown the internal combustion engine (Column 2, lines 53-64). It would have been obvious to one of ordinary skill in the automotive art to combine the system of Harms et al. with the teachings of Raftari et al. because, as Harms et al. suggests, including partial operating modules for the control of the vehicle engine and drive train, specifically timing of startup and shutdown of the engine, would allow for more easily replaced, updated or customized with relative ease and lower expense (Column 2, lines 52-67).

Conclusion

24. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine M. Behncke whose telephone number is (571) 272-8103. The examiner can normally be reached on Monday - Friday 8:30 AM - 5:30 PM.

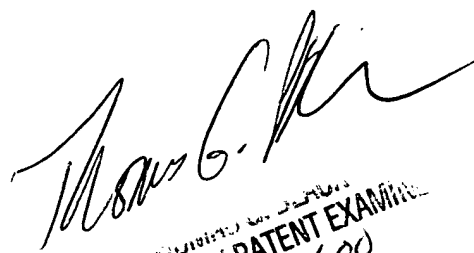
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas G. Black can be reached on (571) 272-6956. The fax phone

Art Unit: 3661

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

02-05-2006


SUPERVISORY PATENT EXAMINER
GROUP 3600